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NEWS MATTER-USELESS IF DELAYED

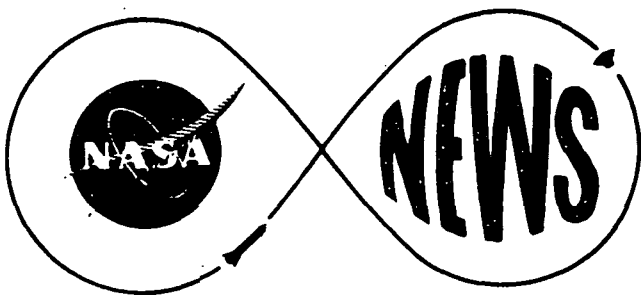
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1. The first step is to identify the problem or question that needs to be answered. This involves understanding the context and the specific requirements of the task.

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**NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION**
Washington, D. C. 20546
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FOR RELEASE:

January 31, 1975

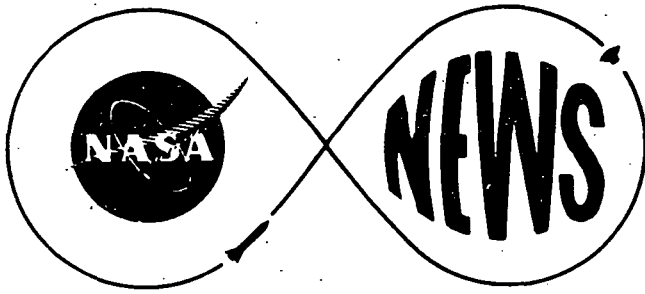
PROJECT: INTELSAT IV

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Washington, D. C. 20546

(Phone: 202/755-8370)

FOR RELEASE:

FRIDAY,
January 31, 1975

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RELEASE NO: 75-7

SEVENTH INTELSAT IV PREPARED FOR LAUNCH

The seventh in the series of INTELSAT IV commercial communications satellites will be launched by NASA aboard an Atlas-Centaur rocket from Cape Canaveral, Fla., about Feb. 6.

The 1,400-kilogram (3,100-pound) satellite will be positioned on the equator over the Indian Ocean. This will be the second INTELSAT IV over the Indian Ocean and completes the world-wide network originally planned. When the satellite is launched, there will be three INTELSAT IVs over the Atlantic Ocean, two over the Pacific and two over the Indian Ocean.

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January 17, 1975

Each INTELSAT IV is able to carry approximately 3,500 two-way telephone conversations under average conditions. Each satellite also can carry 12 television channels.

Despite the growth already experienced, the pressure of rapidly growing demands for international telephone, television and data transmission has led to the development of even larger communications satellites. The first of a new series designated INTELSAT IV-A, with twice the capacity of INTELSAT IV, is scheduled for launch in the summer of 1975.

Both the INTELSAT IV, ready for launch, and the new series, like others in the global communications system, are owned by the International Telecommunications Satellite Organization (INTELSAT). The Communications Satellite Corp. (COMSAT), the United States member, acts as manager on behalf of the other 86 nations in the organization. NASA is reimbursed for all costs of the Atlas-Centaur and launch services by COMSAT on behalf of INTELSAT, under provisions of the Communications Satellite Act of 1962.

The Atlas-Centaur launch vehicle will place the satellite in a highly elliptical orbit ranging from approximately 537 to 35,880 kilometers (334 to 22,300 miles). After checkout and orientation of the satellite, a solid propellant rocket motor aboard the spacecraft will be fired to circularize the orbit at synchronous altitude 35,880 km (22,300 mi.) over the equator. At that altitude, because the speed of the spacecraft in orbit matches the rotational speed of Earth, it appears to hover over one spot.

The launch of INTELSAT spacecraft aboard Atlas-Centaur rockets requires the coordinated efforts of a large government and industry team. NASA's Lewis Research Center, Cleveland, Ohio, has management responsibility for the Atlas-Centaur development and operation. NASA's John F. Kennedy Space Center, Fla., is assigned checkout and launch responsibility once the vehicle reaches Cape Canaveral, Fla. Contractors including General Dynamics/Convair, San Diego, Calif.; Pratt and Whitney, West Palm Beach, Fla.; Hughes Aircraft Co., Sunnyvale, Calif.; Honeywell Aerospace Division, St. Petersburg, Fla.; and Teledyne, Northridge, Calif., perform the actual manufacturing, integration, testing and launch activities.

(END OF GENERAL RELEASE; BACKGROUND INFORMATION FOLLOWS.)

ATLAS-CENTAUR LAUNCH VEHICLE

The Atlas-Centaur is NASA's standard launch vehicle for intermediate weight payloads. It is used for the launch of Earth orbital, Earth synchronous and interplanetary missions.

Centaur was the nation's first high-energy, liquid-hydrogen/liquid-oxygen propelled rocket. Developed and launched under the direction of NASA's Lewis Research Center, Cleveland, Ohio, it became operational in 1966 with the launch of Surveyor 1, the first U.S. spacecraft to soft-land on the Moon's surface.

Since that time, both the Atlas booster and Centaur second stage have undergone many improvements. At present the vehicle combination can place 4,530 kilograms (10,000 pounds) in low Earth orbit, 1,880 kg (4,150 lbs.) in a synchronous transfer orbit, and 900 kg (2,000 lbs.) on an interplanetary trajectory.

The Atlas-Centaur, standing approximately 39.9 meters (131 feet) high, consists of an Atlas SLV-3D booster and Centaur D-1A second stage. The Atlas booster develops 1,920 kilonewtons (431,300 lbs.) of thrust at liftoff using two 822,920 newton (185,000 lbs.) thrust booster engines, one 266,890 N (60,000 lb.) thrust sustainer engine and two vernier engines developing 2,890 N (650 lbs.) thrust each. The two RL-10 engines on Centaur produce a total of 133,450 N (30,000 lbs.) thrust. Both the Atlas and Centaur are 3.048 m (10 ft.) in diameter.

Until early 1974, Centaur was used exclusively in combination with the Atlas booster. Now it is also used with a Titan III booster to launch heavier payloads into Earth orbit and interplanetary trajectories.

The Atlas and the Centaur vehicles have been updated over the years. The thrust of the Atlas engines has been increased about 222,400 N (50,000 lbs.) since its debut in the space program in the early 1960s when it launched the nation's first communications satellite carrying former President Dwight D. Eisenhower's Christmas message to the world.

The Centaur D-1A has an integrated electronic system that performs a major role in checking itself and other vehicle systems before launch and also maintains control of major events after liftoff. The new Centaur system handles navigation, guidance tasks, controls pressurization, propellant management and telemetry formats and transmission, and initiates vehicle events. Most operational needs can be met by changing the computer software.

Typical Launch Vehicle Characteristics

| | |
|-------------------------------------|---------------------------|
| Liftoff weight including spacecraft | 147,750 kg (325,732 lbs.) |
| Liftoff height | 39.9 m (131 ft.) |
| Launch Complex | 36A |

| | <u>Atlas Booster</u> | <u>Centaur Stage</u> |
|---------------------------|---|--|
| Weight (with propellants) | 128,639 kg
(283,600 lbs.) | 17,708 kg
(39,040 lbs.) |
| Height | 21.3 m
(70 ft.) | 18.6 m
(61 ft. with payload fairing) |
| Thrust | 1,919 kn
(431,300 lbs.)
at sea level | 133,447 N
(30,000 lbs.)
in vacuum |
| Propellants | Liquid oxygen and RP-1 | Liquid oxygen and liquid hydrogen |
| Propulsion | MA-5 system (two 822,921 N (185,000-lbs.) thrust booster engines, one 266,893-N (60,000 lb.) thrust sustainer engine, two 2,891-N (650 lb.) thrust vernier engines) | Two 66,723 N (15,000 lbs.) thrust RL-10 engines 14 small hydrogen peroxide thrusters |
| Velocity | 9,004 km per hour
(5,596 mph) at BECO;
13,029 km per hour
(8,096 mph) at SECO. | 33,191 km per hour
(20,624 mph) at spacecraft separation |
| Guidance | Pre-programmed profile through BECO. Switch to inertial guidance for sustainer phase. | Inertial guidance |

ATLAS-CENTAUR FLIGHT HISTORY

| <u>TYPE</u> | <u>NUMBER</u> | <u>YEAR</u> |
|----------------------------------|---------------|-------------|
| R & D | 8 | 1962 - 1966 |
| OPERATIONAL | 25 | |
| 7 Surveyor | | 1966 - 1968 |
| 3 OAO | | 1968 - 1972 |
| 2 ATS | | 1968 - 1969 |
| 2 Mariner Mars Fly-By | | 1969 |
| 6 INTELSAT IV | | 1971 - 1974 |
| 2 Mariner Mars Orbiter | | 1971 |
| 2 Pioneer | | 1972 - 1973 |
| 1 Mariner Venus - Mercury Fly-By | | 1973 |

LAUNCH PREPARATIONS

NASA's John F. Kennedy Space Center and its Unmanned Launch Operations Directorate (ULO) play key roles in the preparation and launch of Atlas-Centaur 33 carrying the INTELSAT IV F-6 spacecraft into orbit.

The INTELSAT IV spacecraft was received last June 24 and placed in Hangar AM at Cape Canaveral Air Force Station to await call-up and prelaunch checkout.

The Atlas and Centaur stages were erected on Pad A at Launch Complex 36 at Cape Canaveral Air Force Station Dec. 5.

In addition to providing necessary spacecraft support services during final launch preparations, ULO is responsible for mating the spacecraft and payload fairing with the launch vehicle. Mating of the spacecraft with Atlas-Centaur 33 is scheduled for late January.

In providing launch operations, KSC handles scheduling of test milestones and review of data to assure that the launch vehicle has met all its test requirements and is ready for launch.

All launch vehicle and pad operations during the launch countdown are conducted from the blockhouse at Complex 36 by a joint government-industry team.

INTELSAT LAUNCH WINDOWS

The primary factor determining the launch window for INTELSAT spacecraft is the angle of the Sun. It is desirable for the solar cells on the spacecraft to receive maximum possible exposure during the transfer orbit. The Sun angle is at its best twice a day at noon and midnight GMT or 7:00 a.m. and 7:00 p.m. EST. Because of the greater convenience for launch crews and tracking operations, the 7:00 p.m. period generally is chosen.

TYPICAL LAUNCH SEQUENCE FOR INTELSAT IV

| Flight Events | Program Time | Earth Relative Velocity | | Range | | Altitude | |
|---------------------------|--------------|-------------------------|--------|---------|------------|----------|------------|
| | | MPH | KM/HR | Miles | Kilometers | Miles | Kilometers |
| BECO | 138.9 | 5,595 | 9,004 | 49.6 | 79.9 | 35.4 | 57 |
| Booster jettison | 142.0 | 5,656 | 9,103 | 52.9 | 85.1 | 37.3 | 60.1 |
| Insulation panel jettison | 183.9 | 6,407 | 10,311 | 118.7 | 191.0 | 60.9 | 98.0 |
| SECO/VECO | 247.1 | 8,096 | 13,029 | 238.3 | 383.5 | 90.8 | 146.2 |
| Centaur separation | 249.1 | 8,091 | 13,021 | 242.6 | 390.5 | 91.7 | 147.6 |
| Centaur MES (1) | 258.6 | 8,024 | 12,915 | 263 | 423.3 | 95.6 | 153.9 |
| Nose fairing jettison | 270.6 | 8,152 | 13,119 | 289 | 465 | 100.1 | 161.1 |
| Centaur MECO (1) | 621.5 | 17,632 | 28,376 | 1,420.7 | 2,286.4 | 117.5 | 189.1 |
| Centaur MES (2) | 1,501.9 | 16,659 | 26,810 | 5,444 | 8,761.3 | 364.6 | 586.8 |
| Centaur MECO (2) | 1,578.9 | 21,011 | 33,814 | 5,803.5 | 9,339.9 | 411 | 661.4 |
| Spacecraft separation | 1,713.9 | 20,624 | 33,191 | 6,490.4 | 10,445.3 | 542.3 | 872.7 |
| Reorient Centaur | 1,718.9 | | | | | | |
| Start blowdown | 1,883.9 | | | | | | |
| End blowdown | 2,133.9 | | | | | | |

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INTELSAT TEAM

NASA Headquarters

| | |
|------------------------|---|
| Charles W. Mathews | Associate Administrator
for Applications |
| Dr. Richard B. Marsten | Director of Communications
Programs |
| Jerome Freibaum | Manager, Technical Consul-
tation Services |
| Noel W. Hinners | Associate Administrator
for Space Science |
| Joseph B. Mahon | Director of Launch Vehicle
and Propulsion Programs |
| F. R. Schmidt | Manager, Atlas-Centaur |

Lewis Research, Cleveland, Ohio

| | |
|-----------------------|---|
| Bruce T. Lundin | Director |
| Dr. Seymour C. Himmel | Associate Director for Flight
Programs |
| Andrew J. Stofan | Director of Launch Vehicles |
| Henry O. Slone | Atlas-Centaur Project Manager |
| Vernon J. Weyers | INTELSAT Mission Project
Engineer |
| Frank L. Manning | Launch Vehicle Project
Engineer |

Kennedy Space Center, Fla.

| | |
|-----------------|--------------------------------------|
| Lee R. Scherer | Director |
| John J. Neilon | Director, Unmanned Launch Operations |
| John Gossett | Manager, Centaur Operations, ULO |
| Ralph Lotspeich | Space Operations, ULO |

COMSAT

| | |
|----------------------|--|
| Dr. Joseph V. Charyk | President |
| George P. Sampson | Senior Vice President, Communication System Management |
| Martin J. Votaw | Assistant Vice President, Engineering |

Industry Team

| <u>Prime Contractors</u> | <u>Responsibility</u> |
|---|---|
| Hughes Aircraft Co.
Sunnyvale, Calif. | INTELSAT IV spacecraft |
| General Dynamics/Convair
San Diego, Calif. | Atlas-Centaur launch vehicle |
| Honeywell, Aerospace Division
St. Petersburg, Fla. | Centaur guidance inertial measurement group |
| Pratt and Whitney
West Palm Beach, Fla. | Centaur RL-10 engines |
| Teledyne
Northridge, Calif. | Digital computer unit/PCM telemetry |